Birds in the Ishasha sector of Queen Elizabeth National Park, Uganda

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Queen Elizabeth National Park (QEP) covers 1978 km^2 of the Western Rift Valley of Uganda and forms part of a large network of protected areas, including the vast Parc National des Virunga of Zaïre to the west, and the Kigezi, Chambura and Kibale Forest Corridor Game Reserves to the east. At least 545 bird species have been recorded in QEP (Anon. 1971), an exceptionally rich total in African terms (Pomeroy & Lewis 1987), due both to the biogeographical history of the area and to the wide diversity of habitats present, including grassland, woodland, forest, lake, swamp and volcanic-crater hills. Most published work on the birds of QEP has been based on studies of single species or families (e.g., Din & Eltringham 1974, Eltringham 1975), and the only check-lists that exist lack information on species' status and distribution (e.g., Anon. 1971). As a contribution towards an up-to-date and more detailed description of the Park's birds, in this paper we summarize our own observations from the Ishasha sector, in the extreme south of QEP.

Study area

Most data were collected from a 28.6 km^2 study area near Ishasha camp, with only occasional records from other localities within the Ishasha sector. The study area was bounded in the north by the Ishasha camp–Katooke track, to the east by the Park's border with the Kigezi Game Reserve, in the south by the 9928 UTM grid line (1:50 000 East African Series map, Department of Lands and Surveys 1965), and in the west by the Ishasha River, the international boundary with Zaïre. The area rises gently from 940 m at the Ishasha River in the west to 1060 m along the Park–Game Reserve boundary in the east. APB was based in the area from 25 March 1987 to 1 March 1989, carrying out research on lekking in Uganda Kob *Kobus kob thomasi* (Balmford 1990). MIE was present as an assistant on this project between 4 December 1988 and 1 March 1989. The research programme left very little spare time for systematic birdwatching; however, the very long hours in the field did allow numerous opportunistic observations to be made.

The climate at Ishasha is equatorial, with negligible fluctuations in day-length through the year and sunrise and sunset at around 07:00 hrs and 19:00 hrs respectively. Monthly mean temperatures vary between 22°C and 25°C, with maxima of 27°C to 30°C and minima of 18°C to 20°C. Annual rainfall averages 860 mm (Uganda National Parks Records 1968–1974). There are two dry seasons (December–February; June–July) and two wet seasons (March–May; August–November) per year although seasonality is less pronounced than in many African savannah ecosystems, with rain falling in nearly every month, and considerable differences between years in the timing of wet and dry seasons. All grassland at Ishasha is regularly burnt, and during the present study extensive dry season fires occurred on 30 December 1987–3 January 1988, 25 June–11 July 1988 and 21–26 January 1989. As a result of this burning regime, most of the vegetation at Ishasha belongs to fire climax communities (Lock 1977).

The study area can be divided into the following avian habitats (see Lock (1977) and

Balmford (1990) for further details):

Riparian forest (community 48 of Lock 1977): this runs in a narrow strip along the Ishasha River; dominant trees include *Pterygota*, *Pseudospondias* and *Treculia*. There are also patches of successional vegetation along the banks and in oxbows.

Riverine bushland (community 40 of Lock 1977): this occurs as the ecotone between the riparian forest and open grassland. It forms a narrow belt of variably dense bushland and low woodland, with clumps of *Euclea* sp., *Diospyros abyssinica* and *Tarenna graveolens*.

Open grassland (including communities 1, 4 and 35 of Lock 1977): this is the most extensive habitat in the study area and consists of medium to tall fire climax communities, mostly treeless and dominated by the grasses *Sporobolus pyramidalis*, *Hyparrhenia filipendula* and *Heteropogon contortus*. Low-lying areas become seasonally water-logged.

Open woodland (community 32 of Lock 1977): this occurs mainly on higher ground in the east of the study area, and is dominated by *Acacia sieberiana*, with scattered *Ficus sycomorus gnaphalocarpa* and *Albizia coriaria*. Its extent has increased substantially in recent years.

Seasonal swamp (including communities 18 and 21 of Lock 1977): this is dominated by Cyperaceae, with *Pistia stratiotes* and *Cynodon dactylon*.

We recorded a total of 220 bird species in Ishasha sector, with two additional species found just outside the Park boundary in the Kigezi Game Reserve. A full species list is given in the Appendix, together with our records of habitat usage by each species.

Comments on selected species

Details are given here of any observations which appear to add to or alter species' status as described in Britton (1980) and *Birds of Africa*, as well as of any uncommon or little-recorded East African species and evidence of breeding by any species. Species' order and nomenclature follow Britton (1980).

Dwarf Bittern *Ixobrychus sturmii* In 1988, singles on 10, 17 and 21 May; two on 4 Sep. Uncommon in East Africa, these possibly being non-breeders from southern Africa (see Britton 1980).

Green-backed Heron *Butorides striatus* One carrying nest material by Ishasha River on 21 Jun 1987.

Yellow-billed Egret *Egretta intermedia* Two records of this widespread but seldom numerous species (Britton 1980), on 15 Jul 1987 and 17 Aug 1987.

Shoebill *Balaeniceps rex* One at the edge of a 10–20 ha seasonal swamp, the largest in the study area, on 15 Feb 1989. A threatened species ("Of Special Concern" (Collar & Stuart 1985)); the nearest record listed by Collar & Stuart is at "Lake Edward north of Rwenshama village".

Abdim's Stork ***Ciconia abdimii*** 2 Aug 1988, an unusually early date (Brown *et al.* 1982).

White Stork ***Ciconia ciconia*** A flock of *c.* 150 migrated northwards through the reserve on 20 Apr 1988. During Dec 1988–Mar 1989 not recorded until after the burn of 21–26 Jan, when there were five records of small groups (1–4 birds) feeding on well-burnt grassland between 22 Jan and 4 Feb at *c.* 950 m; wintering birds are found mainly above 1600 m (Britton 1980).

Woolly-necked Stork ***Ciconia episcopus*** Uncommon and local in Uganda (Britton 1980). Small numbers were usually present in the study area for 1–2 months after burns. For instance, in 1988 it was recorded in Feb, Mar, Apr and Aug; in 1989 there were five records of single birds (possibly all the same individual), 8 Jan–1 Mar.

Saddle-billed Stork ***Ephippiorhynchus senegalensis*** Juveniles in study area 15 Mar, 9 Aug and 28 Oct 1988; noticeably smaller than adults, and presumably from local nests (adults seen infrequently, usually singly, throughout our stay).

Marabou ***Leptoptilos crumeniferus*** Up to 10 overhead on most days; larger concentrations included 25 at a kob carcass on 15 Dec 1988, and a dense group of 38 feeding in an unburnt patch of long grass surrounded by burnt areas on 4 Feb 1989.

Hadada ***Bostrychia hagedash*** Copulation observed in May 1988.

Palm-nut Vulture ***Gypohierax angolensis*** Single adults (possibly all the same individual) recorded on five dates between 15 May 1988 and 1 Mar 1989. On 15 Dec, one descended low to investigate a group of vultures at a carcass but did not join them. One on 4 Jan was in primary moult. The potential foodplants *Raphia fenefera* and *Phoenix reclinata* are present locally (the former in the nearby Kigezi Game Reserve).

African White-backed Vulture ***Gyps africanus*** The commonest and most frequently seen vulture. The maximum counted above any particular kill was 100; maxima at carcasses on the ground were 45 (hippo) and 35 (kob).

Rüppell's Vulture ***Gyps rueppellii*** Only nine records during the period 4 Dec 1988 to 1 Mar 1989, mostly of single birds.

Hooded Vulture ***Neophron monachus*** The maximum of two birds (adults) seen at any one time during 4 Dec 1988–1 Mar 1989 suggested that only one pair frequented the study area.

Lappet-faced Vulture ***Torgos tracheliotus*** Frequent sightings 4 Dec 1988–1 Mar 1989 suggested that an adult pair frequented the study area, accompanied by a juvenile/immature (at least up to 17 Dec). On 29 Jan the adult pair were flying together with another adult pair, but no interaction was seen.

White-headed Vulture ***Trigonoceps occipitalis*** Never more than five together in the study area; frequent sightings during Dec 1988 to Mar 1989 suggested that these comprised an adult pair, two immatures and a juvenile. Four feeding on the carcass of a *c.* 10-kg juvenile kob on 25 Jan 1989 was possible evidence of predation.

European Marsh Harrier ***Circus aeruginosus*** Recognition of individuals was possible, and suggested that at least four to six individuals occurred in the study area between 4 Dec 1988 and 1 Mar 1989, with at least three known to have been resident throughout the period.

Pallid Harrier ***Circus macrourus*** Although not mapped as occurring in SW Uganda (Brown *et al.* 1982), there were four records between 24 Jan and 1 Mar 1989 (three males, one 'ringtail').

Montagu's Harrier ***Circus pygargus*** In 1989 24 seen between 27 Jan and 1 Mar (ignoring the possibility of duplication, which seemed low given the wide variety of plumages noted); the majority occurred in Feb (18) and nearly all were males (20 adult, two immature). At least seven of the 24 were flying directly northwards and appeared to be migrating (purposeful flight in other directions was not observed); Brown *et al.* (1982) state that migration in Africa begins in late Mar.

Brown Snake Eagle ***Circaetus cinereus*** During 4 Dec 1988 to 1 Mar 1989 only recorded three times (up to three birds), suggesting a low population density.

Black-chested Snake Eagle ***Circaetus gallicus pectoralis*** From 4 Dec 1988 to 1 Mar 1989 an adult pair was seen regularly in the study area, usually flying and hunting together and often displaying with much calling, diving at each other and making as if to talon-grapple. A juvenile was seen in the area on 30 Jan and 3 Feb, once alone and once with an adult perched nearby (the juvenile had a 60-cm long snake). On plumage, the juvenile appeared to be quite old, and would seem to have been virtually independent; the adults' behaviour suggested the beginning of a new breeding cycle.

Bateleur ***Terathopius ecaudatus*** During 4 Dec 1988 to 1 Mar 1989 an adult pair, a 5–6-year-old immature (aged on plumage) and a juvenile frequented the study area. On 18 Dec the resident adult male flew parallel with an intruding adult male and gave a single, striking call; no other territorial interactions were seen during the period.

Tawny Eagle ***Aquila rapax*** There are no breeding records from this region (Area B of Brown & Britton 1980), but a pair frequented the study area between 4 Dec 1988 and 1 Mar 1989, and were seen displaying on 8 Feb 1989 ('pot-hooks' by male, with female swooping around above him, and one or both calling a lot). The pair may have gone on to breed. Mapped as absent from SW Uganda (Brown *et al.* 1982).

Wahlberg's Eagle ***Aquila wahlbergi*** A pair seen regularly in the study area between early Sep 1988 and 1 Mar 1989. They frequently performed aerial displays in Sep and Oct; the male (of the uncommon (Britton 1980) pale morph) also did a linear 'pot-hook' display on 23 Jan and a circular 'roller-coaster' display on 25 Jan. At dusk they were usually seen near the riverine forest, where they probably roosted and nested.

Common Buzzard ***Buteo buteo*** Between 4 Dec 1988 and 1 Mar 1989 the only records were of two single birds during the burn of 21–26 Jan; widespread in small numbers in winter in East Africa (Britton 1980).

Gabar Goshawk ***Melierax gabar*** During 4 Dec 1988–1 Mar 1989 four or five different adults were seen in the study area, of which one was a black morph.

Martial Eagle ***Polemaetus bellicosus*** A large fledgling bird of prey, thought to be this species, was recorded on 16 Nov 1987 and a pair definitely bred in May 1988. A nest was found in a large *Albizia coraria* tree on 2 Nov 1988, apparently in use as there was quite a lot of droppings around, although no chicks present; another nest in a large *A. coriaria* tree *c.* 1.5 km to the NE had been used in 1982 and 1986 (P. Moller pers. comm.). During 4 Dec 1988–1 Mar 1989 an adult pair and an immature were present in the study area. Adults with freshly killed hares *Lepus crawshayi* were noted on 19 Mar 1988 and 9 Aug 1988. The immature harried a hare at dusk on 8 Jan 1989, making three

unsuccessful pounces, and returned to perch overlooking the same area at dusk the following day, presumably with the intention of repeating its efforts, since it was never otherwise seen to roost at this site. It was not rewarded, however.

Black-shouldered Kite ***Elanus caeruleus*** A pair nested during 4 Dec 1988–1 Mar 1989, successfully fledging at least one chick (fledged juvenile first seen 26 Feb; various behavioural observations on the pair suggest that the first egg was probably laid in the second half of Dec). During incubation and rearing the adult(s) usually ranged over an 8-km^2 area of virtually treeless grassland plain, and were often seen hover-hunting for Nile Rats *Arvicanthis niloticus*, which were common. Food-carrying and raptor-mobbing behaviour showed the nest to be located at the ecotone between *Acacia* woodland and open grassland, although it was not looked for or found.

Grey Kestrel ***Falco ardosiaceus*** A pair of this uncommon species (Britton 1980) lived unobtrusively near camp, frequenting riverine bushland adjacent to the riparian forest, and once seen perched on top of a dead tree in the forest itself.

African Hobby ***Falco cuvieri*** One in riparian forest on 2 Nov 1988 was the only record; widespread in small numbers in East Africa (Britton 1980).

Peregrine Falcon ***Falco peregrinus*** Two records in the study area: an adult flying north on 31 Jan 1989, pausing occasionally to perch in *Acacia* trees, thought to be *F. p. calidus* because of its apparent large size and its notably grey-tinged upperparts. An immature or juvenile flew east on 9 Feb 1989. There are no precipitous sites in the immediate vicinity suitable for nesting.

Hobby ***Falco subbuteo*** Individuals seen on 8 Dec 1988 and 4 Jan 1989; winterers are unusual this far north (Britton 1980, Brown *et al.* 1982) and these birds did not linger in the area.

Red-necked Spurfowl ***Francolinus afer*** Pairs with 'broods' of 1–3 young seen frequently in Dec 1988, Jan and Feb 1989.

Red-winged Francolin ***Francolinus levaillantii*** This species is especially plentiful in neighbouring Ankole district (Britton 1980), but the only record was of a pair near the Katooke gate in open *Acacia* woodland at *c.* 1000 m on 23 Jan 1989.

Black-rumped Button Quail ***Turnix hottentota*** Ten button quails were seen from 4 Dec 1988 until the burn of 21–26 Jan 1989, 13 during the burn and only two after it (both in unburned patches of grass), up to 1 Mar 1989. During the burn buttonquails were noticeably concentrated in front of advancing firefronts. It would appear that burning caused most of the population to leave the area. At least ten of the 25 button quails recorded had black rumps and it is thought that most or all of the others were also of this species, since they were virtually all recorded in the same habitat, seasonally water-logged open grassland. A button quail with two very small chicks was seen on 22 Jan 1989 in this habitat (implying a laying date of a few days either side of 1 Jan), and is assumed to have been *T. hottentota*. At *c.* 950 m, lower than the 1200 m altitude minimum given in Britton (1980).

Crowned Crane ***Balearica pavonina*** Pairs with dependent juveniles were seen on 28 Sep 1987 and 4 Apr 1988.

African Crake ***Crex egregia*** A generally uncommon species whose temporal patterns of occurrence, especially in equatorial regions, remain a mystery (Britton 1980). It was recorded in at least Aug and Sep 1987, and between 5 Dec 1988 and 3 Feb 1989; during

this latter period it was seen on most days up to the burn of 21–26 Jan 1989 but disappeared soon after, with at least 15 sightings before, one during and four after the burn (when always found in islands of unburnt grass). It was not seen at all between 3 Feb and 1 Mar 1989. Thus the disappearance of the species from the study area was strongly correlated with the burn, no doubt due to the destruction of its grassland habitat.

Black-bellied Bustard ***Eupodotis melanogaster*** A solitary male was displaying on a termite mound on 20 Nov 1987 and two males were displaying on 16 Aug 1988, one chasing a female. No breeding behaviour was observed in the period 4 Dec 1988–1 Mar 1989, during which it was observed on at least 18 of 33 days in the field before the burn (>55%), but on only four out of 27 days after it (15%), usually in islands of unburnt grass.

African Jacana ***Actophilornis africanus*** An adult with two very small chicks on 8 Dec 1988; on 4 Feb 1989 the chicks, now well-grown juveniles, were still accompanied by the adult.

Caspian Plover ***Charadrius asiaticus*** During 4 Dec 1988–1 Mar 1989 the species first appeared during the burn of 21–26 Jan, and was still present in similar numbers (15–30 per day) at the end of the period (in 1987 the study area's population had left by 25 Mar). In between, however, numbers dramatically increased on 9 Feb (76 seen), after rain earlier that day (the first rain since four weeks before the burn), then decreased to previous levels within a few days, suggesting a large but temporary influx to take advantage of an ephemeral flush of invertebrates.

Crowned Plover ***Vanellus coronatus*** During the period 4 Dec 1988–1 Mar 1989, first appeared the day before the burn of 21–26 Jan, with numbers peaking at 26 during the burn; thereafter recorded in pairs and small groups (up to 8 per day) until the end of the period.

Long-toed Plover ***Vanellus crassirostris*** Recorded at least from 9 Jul to 17 Aug 1987 in seasonal swamp, and also on 8 Aug 1988; not noted there in the dry period 4 Dec 1988–1 Mar 1989.

Senegal Plover ***Vanellus lugubris*** Present around the time of burns, e.g. in Jul 1988; returned on 20 Dec 1988 and present up to the end of our stay, with a temporary increase in numbers during the burn of 21–26 Jan 1989.

Brown-chested Wattled Plover ***Vanellus superciliosus*** Recorded in small numbers after the burn of Jul 1988.

Great Snipe ***Gallinago media*** During the period 4 Dec 1988–1 Mar 1989 the only record of this declining Palaearctic migrant (Britton 1980, Cramp & Simmons 1983) was of two on 11 Dec near a seasonal swamp in water-logged grassland, which was rapidly drying out as the dry season progressed.

Water Thick-knee ***Burhinus vermiculatus*** An apparent pair flew over our camp (300 m from the Ishasha River) calling every morning before sunrise (usually 05:45–06:15 hrs, but as early as 04:15 hrs) and every evening after sunset (usually 19:20–20:15 hrs, but calling as early as 17:55 hrs). The pair generally flew over together at *c.* 15 m height in a straight line, gliding while whistling a long, descending, trilling series of high, shrill notes, wailing and mournful. Urban *et al.* (1986) do not describe this behaviour.

Temminck's Courser ***Cursorius temminckii*** There is only a single breeding record for the region (Area B of Brown & Britton 1980), in Aug. However, the species arrived and was common immediately after the burns of Jan 1988 and 1989, apparently already paired, and much territorial display-flighting noted at least in Jan–Feb 1989: each flight lasts 1–3 min, bird flying at *c.* 20 m height in a large circuit over its (presumed) nesting territory, calling every 2–5 s, a short, grating but slightly piping note, before descending in a shallow glide to land near take-off point. Flighting ceases *c.* 4 h either side of noon, probably peaking 07:00–08:00 hrs and 18:00–19:00 hrs; also once recorded at 00:30 hrs (half-moon).

Common Pratincole ***Glareola pratincola*** Several hundred were present in open grassland between Jun and Aug in both years. Breeding was confirmed on 5 Jun 1987, when eggs were noted on the open ground of a kob lek, where chicks were then recorded on 20 Jun. One to two birds occasionally visited this lek between Dec 1988 and early Feb 1989, this pattern being unaffected by the burn of 21–26 Jan. However, on 9 Feb 100 visited the lek after rain earlier that day, the first rain for six weeks. Up until 1 Mar no further visits to the lek were noted, although a flock of 50 was at a nearby seasonal swamp on 26 Feb.

White-winged Black Tern ***Chlidonias leucopterus*** Up to 15 were seen per day, feeding over green grassland, during the virtually rainless period from 4 Dec 1988 until 7 Jan 1989. Thereafter, significant areas of grass were beginning to turn brown and there were no further records until our departure on 1 Mar 1989.

Emerald-spotted Wood Dove ***Turtur chalcospilos*** There was at least one sighting: one at camp on 26 Dec 1988. Although Britton (1980) recorded it only from the drier areas of Teso and Karamoja in Uganda, the species is in the Park's check-list (Anon. 1971) and is mapped in SW Uganda by Urban *et al.* (1986), and also occurs in Lake Mburo National Park (D. Pomeroy, pers. comm.).

Great Spotted Cuckoo ***Clamator glandarius*** A juvenile on 2 Nov 1988 hopping along a road and possibly the same juvenile on 15 Dec 1988, 2 km from the first site. These records are unexpected since in Uganda the species has not been recorded south of the equator, occurring mainly in the north (breeding in Mar–May but present throughout the year) (Britton 1980). This is also the first record of the species from the Park (see Anon. 1971).

African Cuckoo ***Cuculus gularis*** First recorded on 30 Jan 1989 when one was heard calling from *Acacia* woodland (MIE was familiar with the call from Malawi), and thereafter this individual was heard daily from the same site up until the last visit there, on 24 Feb. From 31 Jan until 1 Mar 1989 unidentified individuals of *C. canorus*/*C. gularis* were seen frequently in the same area of *Acacia* woodland, with up to 19 bird-sightings per day. None of the birds seen was heard to call, as observations were made from a moving car. However, as the beginning of calling and start of sightings were only a day apart it is possible that some or all of the birds seen were also *C. gularis*. This species is generally uncommon in East Africa with no documented breeding, and has previously been recorded in Uganda only between Mar and Nov (Britton 1980).

Black Coucal ***Centropus grillii*** A pair in open grassland were observed infrequently between 10 Dec 1988 and 3 Jan 1989. They were very easy to overlook, using *Capparis* bushes, *Indigofera* thickets and small *Cyperus* swamps for cover. A lone, fully-fledged juvenile on this pair's territory on 20 Jan suggested successful breeding; the lack of

further records up until our departure on 1 Mar suggested that the burn of 21–26 Jan caused the local population to leave the area.

White-browed Coucal ***Centropus superciliosus*** During the period 4 Dec 1988 to 1 Mar 1989, commonly seen in open grassland (on the same ground as *C. grillii*) before the burn of 21–26 Jan, but with no records thereafter in this habitat. It continued to be seen in other habitats less affected by fire such as riverine bushland.

White-tailed Nightjar ***Caprimulgus natalensis*** There was a decrease in numbers during the study period, thought to be due to the drying out and eventual burning of the species' habitat, open grassland. Dawn counts of singing birds at a site were 20 on 11 Dec 1988, ten on 7 Jan 1989 and two on 7 Feb 1989. The birds sang strongly at dusk and dawn, but not much or at all during the night; length of birds' song period averaged 45.0 min (n = 2) at dusk and 77.5 min (n = 2) at dawn.

Pennant-winged Nightjar ***Macrodipteryx vexillarius*** In 1987 first recorded on 15 Jul, with a large influx on 3 Aug, and large numbers noted thereafter until at least 15 Aug, when very many males were watched taking off at dusk. In 1988 first noted on 8 Aug.

Eurasian Swift ***Apus apus*** The only record was of a flock of 20 flying low after rain on 9 Feb 1989; possibly early spring migrants (see Britton 1980).

Pygmy Kingfisher ***Ispidina picta*** A pair feeding nestlings between 2 and 14 Feb 1989 at least; nestling food included a small grasshopper. The nesthole was in a sheer, south-facing earth bank of the Ishasha River, 1.5 m above the water and under a rooty overhang.

Eurasian Bee-eater ***Merops apiaster*** There were only two records of this local winterer (Britton 1980), 20 on 9 Dec 1988 and six on 10 Feb 1989. Both flocks were being pushed ahead of a storm front.

Eurasian Roller ***Coracias garrulus*** Although the species usually winters in drier areas of East Africa (Britton 1980), there were records of two birds on 16 Nov 1987 and of single birds on 3–4 Dec 1988, 8 and 11 Feb 1989.

Yellow-fronted Tinkerbird ***Pogoniulus chrysoconus*** One seen well in riverine forest on 7 Feb 1989 was the only record of this rather uncommon bird which is absent from some parts of SW Uganda (Britton 1980).

Red-capped Lark ***Calandrella cinerea*** During 4 Dec 1988–1 Mar 1989 only recorded on 2–3 Feb, on plains burnt on 21–26 Jan; song was heard on 3 Feb. Typically found higher than 1200 m in East Africa (Britton 1980) thus quite low at *c.* 950 m.

Rufous-naped Lark ***Mirafra africana*** Frequently recorded at *c.* 950 m in the study site; seldom found below 1200 m in East Africa (Britton 1980).

Banded Martin ***Riparia cincta*** During the period 4 Dec 1988–1 Mar 1989, this was the only hirundine to show a major reduction in numbers after the burn of 21–26 Jan 1989. Although recorded on at least 19 out of 33 days (>58%) in the field before the burn (up to 37 birds per day), it was only seen on 2 out of 27 days (7%) in the field after the burn (up to 3 a day) and on these occasions was found at unburnt islands of grass.

Sooty Chat ***Myrmecocichla nigra*** Frequently seen in the study area, at *c.* 950 m; Britton (1980) gives the lower altitude limit as 1200 m.

Isabelline Wheatear ***Oenanthe isabellina*** The only record was of one on 27 Jan 1989, immediately after the Jan burn. It was very aggressive towards a Northern Wheatear

whose winter territory it was on. Occurrence is only very occasional in S and W Uganda (Britton 1980).

Northern Wheatear ***Oenanthe oenanthe*** A male held a winter territory on a kob lek throughout the period 9 Dec 1988–26 Feb 1989 at least. No other individuals were noted in Dec and Jan, but there were eight between 7 and 26 Feb, presumably north-bound migrants. The species is uncommon in SW Uganda (Britton 1980).

Pied Wheatear ***Oenanthe pleschanka*** Two females on 15 Feb 1989 were the only record; a scarce species in western Uganda (Britton 1980).

White-chinned Prinia ***Prinia leucopogon*** A pair at 940 m in bushes by the Ishasha River on 26 Feb 1989; Britton (1980) gives 1100 m as the lower altitude limit.

Red-throated Pipit ***Anthus cervinus*** Although generally scarce in Uganda (Britton 1980), birds were recorded in the study area on nine occasions between 30 Dec 1988 and 10 Feb 1989.

Plain-backed Pipit ***Anthus leucophrys*** Although present in short grass along road verges before the burn of 21–26 Jan 1989, the species was more common and widespread after the burn, with pairs and much song-flighting in Feb.

Richard's Pipit ***Anthus novaeseelandiae*** During the period 4 Dec 1988–1 Mar 1989, this species was not recorded until a few hours before the study area started to burn, with a single bird arriving at dusk on 20 Jan 1989. Birds were then seen frequently during the burn, and thereafter until our departure. They were always seen on burnt areas, with territorial fighting and much song-flighting observed. This and the previous species occurred on the same ground.

Yellow-throated Longclaw ***Macronyx croceus*** One carrying nest material in Oct 1987. A pair with a fledgling on 2 Jan 1989, implying a laying date in Nov/Dec.

Black-headed Gonolek ***Laniarius barbarus*** A pair with a fledgling on 5 Feb 1989; on 14 Feb it was still dependent.

Grey-backed Fiscal ***Lanius excubitorius*** An active nest on 11 Oct 1988.

Wattled Starling ***Creatophora cinerea*** A flock of 20–30 with some males with fully-developed wattles on 18 May 1988; the occurrence of such birds in East Africa is extremely irregular (Britton 1980).

Collared Sunbird ***Anthreptes collaris*** A pair with at least three recently fledged juveniles on 22 Jan 1989; the family were still together on 14 Feb.

Olive-bellied Sunbird ***Nectarinia chloropygia*** A pair with three recently fledged juveniles on 26 Jan 1989. Food-plant: *Maerua* sp..

Copper Sunbird ***Nectarinia cuprea*** A male with a recently fledged juvenile on 26 Jan 1989.

Scarlet-chested Sunbird ***Nectarinia senegalensis*** Female food-carrying 4–5 Dec 1988. Food-plant: *Leonotis nepetifolia.*

Green-headed Sunbird ***Nectarinia verticalis*** Birds, including a pair, seen on four occasions between 22 Jan and 14 Feb 1989 at 940 m in riverine forest. Britton (1980) gives the lower altitudinal limit as 1200 m.

White-winged Widowbird ***Euplectes albonotatus*** During 4 Dec 1988–1 Mar 1989 only observed in non-breeding flocks of five to 200 birds, with almost 50% of flocks

numbering 30–40. In Dec and Jan males were moulting into breeding plumage; the first males in full breeding plumage were seen on 11 Feb.

[**Red-naped Widowbird** ***Euplectes ardens*** We did not note this species in the Park, although it is quite common in the area (D. Pomeroy, pers. comm.).]

Fan-tailed Widowbird ***Euplectes axillaris*** Noted in the Park on 23 Sep 1988, but not present during the period 4 Dec 1988–1 Mar 1989 (although it was in the Game Reserve).

Black-winged Red Bishop ***Euplectes hordeaceus*** There were three records: a male on 28 Jan 1989 in the south of the sector, two males near Ishasha camp on 2 Feb 1989 and a male with two females near Ishasha camp on 12 Feb 1989. All males were in breeding plumage. Although previously recorded from the Park (Anon. 1971), Britton (1980) indicated that the species was not found south of Toro district in Uganda, thus the above records extend the species's known range into Rukungiri district.

Masked Weaver ***Ploceus intermedius*** During 4 Dec 1988–1 Mar 1989 it was recorded on only three occasions (in Feb and Mar), including seven males at camp in a mixed-species weaver colony of Black-headed *P. cucullatus* and Viellot's Black Weavers *P. nigerrimus*. Britton (1980) implied that the species had not been recorded from Rukungiri district.

Black-necked Weaver ***Ploceus nigricollis*** Both this species and *P. ocularis* occurred together in riparian forest; Britton (1980) noted only one locality (coastal Kenya) where these two mostly allopatric members of a super-species occur together, although they also occur together at Mubende (D. Pomeroy, pers. comm.). *P. nigricollis* was observed foraging in secondary riverside bushes and an *Acacia* tree, whilst *P. ocularis* was noted within dense riverside bushes and in the forest canopy.

Red-headed Quelea ***Quelea erythrops*** A male, moulting into or out of breeding plumage, on 7 Feb 1989 near Ishasha camp. Very local throughout East Africa (Britton 1980).

Pin-tailed Whydah ***Vidua macroura*** Males' tail-streamers almost fully grown on 26 Feb 1989.

Fawn-breasted Waxbill ***Estrilda paludicola*** Recorded at 940 m, slightly lower than the 1000 m minimum in Britton (1980).

Red-headed Bluebill ***Spermophaga ruficapilla*** There were two records: a juvenile male feeding on grass seeds, apparently independent but still with a trace of a gape flange, in riparian forest on 14 Feb 1989; and an adult male feeding on seeds of riverside herbs on 25 Feb 1989. Widespread in forests in Uganda (Britton 1980) but records from riparian forest localities are not mentioned.

Cinnamon-breasted Rock Bunting ***Emberiza tahapisi*** The only record was of three on 2 Feb 1989 in riverine thicket, apparently atypical habitat as there were no rocky areas in the whole study area (see Britton 1980).

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References

Anonymous 1971. A check-list of birds known to occur in the Uganda National Parks. *In Uganda National Parks Handbook,* 5th edition. Pp. 140–149. Kampala: Longman Uganda.

Balmford, A.P. 1990. Lekking in kob. PhD thesis, Zoology Department, Cambridge University, UK.

Britton, P.L. (ed.) 1980. *Birds of East Africa, their habitat, status and distribution.* Nairobi: EANHS.

Brown, L.H. & Britton, P.L. 1980. *The breeding seasons of East African birds.* Nairobi: EANHS.

Brown, L.H., Urban, E.K. & Newman, K. 1982. *The birds of Africa.* Vol. 1. London: Academic Press.

Collar, N.J. & Stuart, S.N. 1985. *Threatened birds of Africa and related islands.* Cambridge: ICBP & IUCN.

Cramp, S. & Simmons, K.E.L. (eds) 1983. *The birds of the western Palearctic.* Vol. 3. Oxford: Oxford University Press.

Din, N.A. & Eltringham, S.K. 1974. Ecological separation between white and pink-backed pelicans in the Rwenzori National Park, Uganda. *Ibis* 116: 28–43.

Eltringham, S.K. 1975. Territory size and distribution in the African fish eagle. *Journal of Zoology, London* 175: 1–13.

Fry, C.H., Keith, S. & Urban, E.K. 1988. *The birds of Africa.* Vol. 3. London: Academic Press.

Lock, J.M. 1977. The vegetation of Rwenzori National Park, Uganda. *Botanische Jahrbucher für Systematik, Pflanzengeschichte und Pflanzengeographie* 98: 372–448.

Pomeroy, D. & Lewis, A. 1987. Bird species richness in tropical Africa: some comparisons. *Biological Conservation* 40: 28–43.

Urban, E.K., Fry, C.H. & Keith, S. 1986. *The birds of Africa.* Vol. 2. London: Academic Press.

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Appendix

Checklist of birds observed by the authors in Ishasha sector, Queen Elizabeth National Park, showing habitat usage

Key

R Riparian forest, Ishasha River and associated successional vegetation
B Riverine bushland
G Open grassland
W Open *Acacia* woodland
S Seasonal swamp
A Species only seen flying over, or habitually aerial
C Camp buildings/Commensal

(See 'Study area', pp. 34–35 for more details on habitats.)

	R	B	G	W	S	A	C
White Pelican *Pelecanus onocrotalus*						+	
Pink-backed Pelican *Pelecanus rufescens*						+	
Dwarf Bittern *Ixobrychus sturmii*					+	+	
Grey Heron *Ardea cinerea*					+		
Goliath Heron *Ardea goliath*	+				+		
Black-headed Heron *Ardea melanocephala*			+		+		
Purple Heron *Ardea purpurea*	+						
Cattle Egret *Bubulcus ibis*		+	+	+			
Green-backed Heron *Butorides striatus*	+				+		
Little Egret *Egretta garzetta*					+		
Yellow-billed Egret *Egretta intermedia*					+		
Shoebill *Balaeniceps rex*					+		
Hamerkop *Scopus umbretta*	+	+		+			
Open-billed Stork *Anastomus lamelligerus*					+		
Abdim's Stork *Ciconia abdimii*			+				
White Stork *Ciconia ciconia*			+				
Woolly-necked Stork *Ciconia episcopus*	+				+		
Saddle-billed Stork *Ephippiorhynchus senegalensis*		+			+		
Marabou *Leptoptilos crumeniferus*			+	+		+	
Yellow-billed Stork *Mycteria ibis*					+		
Hadada *Bostrychia hagedash*	+						
Sacred Ibis *Threskiornis aethiopica*					+		
White-faced Whistling Duck *Dendrocygna viduata*					+		
Egyptian Goose *Alopochen aegyptiacus*					+		
Red-billed Teal *Anas erythrorhynchos*					+		
Yellow-billed Duck *Anas undulata*					+		
Southern Pochard *Aythya erythophthalma*					+		
Spur-winged Goose *Plectopterus gambensis*					+		
Knob-billed Duck *Sarkidiornis melanotos*					+		
Palm-nut Vulture *Gypohierax angolensis*	+					+	
African White-backed Vulture *Gyps africanus*			+	+		+	
Rüppell's Vulture *Gyps rueppellii*			+	+		+	
Hooded Vulture *Neophron monachus*			+	+		+	
Lappet-faced Vulture *Torgos tracheliotus*			+	+		+	

	R	B	G	W	S	A	C
White-headed Vulture *Trigonoceps occipitalis*			+	+		+	
European Marsh Harrier *Circus aeruginosus*			+		+		
Pallid Harrier *Circus macrourus*			+				
Montagu's Harrier *Circus pygargus*			+				
Harrier Hawk *Polyboroides radiatus*				+			
Banded Snake Eagle *Circaetus cinerascens*	+						
Brown Snake Eagle *Circaetus cinereus*	+		+			+	
Short-toed Snake Eagle *Circaetus gallicus*			+			+	
Bateleur *Terathopius ecaudatus*			+	+		+	
Little Sparrowhawk *Accipiter minullus*		+					
Tawny Eagle *Aquila rapax*	+		+			+	
Wahlberg's Eagle *Aquila wahlbergi*		+	+	+		+	
Common Buzzard *Buteo buteo*			+	+			
Long-crested Eagle *Lophaetus occipitalis*	+	+		+			
Gabar Goshawk *Melierax gabar*		+	+	+			
Martial Eagle *Polemaetus bellicosus*		+	+	+		+	
Fish Eagle *Haliaetus vocifer*	+		+			+	
Black Kite *Milvus migrans*	+	+	+	+		+	+
Black-shouldered Kite *Elanus caeruleus*			+	+			
Osprey *Pandion haliaetus*	+			+		+	
Grey Kestrel *Falco ardosiaceus*	+	+					
African Hobby *Falco cuvieri*	+						
Peregrine Falcon *Falco peregrinus*			+	+		+	
Hobby *Falco subbuteo*			+			+	
Red-necked Spurfowl *Francolinus afer*			+	+			
Red-winged Francolin *Francolinus levaillantii*				+			
Crested Guineafowl *Guttera edouardi*	+						
Helmeted Guineafowl *Numida meleagris*			+				
Black-rumped Button Quail *Turnix hottentota*			+				
Crowned Crane *Balearica pavonina*			+		+		
African Crake *Crex egregia*			+	+			
Common Moorhen *Gallinula chloropus*					+		
Black Crake *Limnocorax flavirostra*					+		
Red-knobbed Coot *Fulica cristata*					+		
Black-bellied Bustard *Eupodotis melanogaster*			+	+			
Jacana *Actophilornis africanus*					+		
Caspian Plover *Charadrius asiaticus*			+				
Kittlitz's Plover *Charadrius pecuarius*					+		
Three-banded Plover *Charadrius tricollaris*	+				+		
Crowned Plover *Vanellus coronatus*			+				
Long-toed Plover *Vanellus crassirostris*					+		
Senegal Plover *Vanellus lugubris*			+	+			
Wattled Plover *Vanellus senegallus*			+		+		
Spur-winged Plover *Vanellus spinosus*					+		
Brown-chested Wattled Plover *Vanellus superciliosus*			+				
Common Sandpiper *Actitis hypoleucos*	+				+		
Wood Sandpiper *Tringa glareola*					+		
Greenshank *Tringa nebularia*	+				+		
Green Sandpiper *Tringa ochropus*	+				+		
Great Snipe *Gallinago media*			+				
Little Stint *Calidris minuta*	+				+		
Black-winged Stilt *Himantopus himantopus*					+		
Water Thicknee *Burhinus vermiculatus*	+	+					
Temminck's Courser *Cursorius temminckii*			+				

	R	B	G	W	S	A	C
Common Pratincole *Glareola pratincola*			+		+		
White-winged Black Tern *Chlidonias leucopterus*			+		+		
Ring-necked Dove *Streptopelia capicola*		+		+			
Red-eyed Dove *Streptopelia semitorquata*	+	+					
Laughing Dove *Streptopelia senegalensis*						+	
Blue-spotted Wood Dove *Turtur afer*	+	+					
Emerald-spotted Wood Dove *Turtur chalcospilos*		+					
Tambourine Dove *Turtur tympanistria*	+						
Green Pigeon *Treron australis*	+	+					
Red-headed Lovebird *Agapornis pullaria*	+	+					
Great Blue Turaco *Corythaeola cristata*	+						
Ross's Turaco *Musophaga rossae*	+						
Didric Cuckoo *Chrysococcyx caprius*		+		+			
Great Spotted Cuckoo *Clamator glandarius*			+	+			
Jacobin Cuckoo *Clamator jacobinus*		+		+			
Levaillant's Cuckoo *Clamator levaillantii*	+						
African Cuckoo *Cuculus gularis*				+			
Red-chested Cuckoo *Cuculus solitarius*	+						
Yellowbill *Ceuthmochares aereus*	+						
Black Coucal *Centropus grillii*		+	+	+	+		
White-browed Coucal *Centropus superciliosus*			+	+			
Verreaux's Eagle Owl *Bubo lacteus*	+	+					
Gabon Nightjar *Caprimulgus fossii*		+	+				
White-tailed Nightjar *Caprimulgus natalensis*			+				
Pennant-winged Nightjar *Macrodipteryx vexillarius*			+	+			
Eurasian Swift *Apus apus*						+	
White-rumped Swift *Apus caffer*						+	+
Speckled Mousebird *Colius striatus*		+					
Blue-naped Mousebird *Urocolius macrourus*		+		+			
Pied Kingfisher *Ceryle rudis*	+						
Malachite Kingfisher *Alcedo cristata*	+						
Striped Kingfisher *Halcyon chelicuti*				+			
Chestnut-bellied Kingfisher *Halcyon leucocephala*		+					
Woodland Kingfisher *Halcyon senegalensis*	+						
Pygmy Kingfisher *Ispidina picta*	+	+					
White-throated Bee-eater *Merops albicollis*	+	+	+				
Eurasian Bee-eater *Merops apiaster*						+	
Black Bee-eater *Merops gularis*	+						
Blue-cheeked Bee-eater *Merops persicus*			+				
Little Bee-eater *Merops pusillus*		+		+			
Eurasian Roller *Coracias garrulus*			+	+			
Broad-billed Roller *Eurystomus glaucurus*	+	+					
Black & White Casqued Hornbill *Bycanistes subcylindricus*	+	+		+			
Crowned Hornbill *Tockus alboterminatus*	+			+			
Yellow-fronted Tinkerbird *Pogoniulus chrysoconus*	+						
Speckled Tinkerbird *Pogoniulus scolopaceus*	+						
Nubian Woodpecker *Campethera nubica*				+			
Cardinal Woodpecker *Dendropicos fuscescens*		+					
Grey Woodpecker *Mesopicos goertae*				+			
Bearded Woodpecker *Thripias namaquus*				+			
Red-capped Lark *Calandrella cinerea*			+				
Rufous-naped Lark *Mirafra africana*			+				
Flappet Lark *Mirafra rufocinnamomea*			+				

	R	B	G	W	S	A	C
Striped Swallow *Hirundo abyssinica*			+			+	+
Eurasian Swallow *Hirundo rustica*			+	+	+	+	
Mosque Swallow *Hirundo senegalensis*			+			+	
Wire-tailed Swallow *Hirundo smithii*	+	+				+	
White-headed Roughwing *Psalidoprocne albiceps*	+	+				+	
Banded Martin *Riparia cincta*			+			+	
Sand Martin *Riparia riparia*			+			+	
Drongo *Dicrurus adsimilis*		+		+			
Pied Crow *Corvus albus*							+
Black-lored Babbler *Turdoides melanops*		+		+			
Yellow-throated Leaflove *Chlorocichla flavicollis*	+						
Common Bulbul *Pycnonotus barbatus*	+	+		+			
White-browed Scrub Robin *Cercotrichas leucophrys*		+					
White-browed Robin Chat *Cossypha heuglini*	+	+		+			
Sooty Chat *Myrmecocichla nigra*			+	+			
Isabelline Wheatear *Oenanthe isabellina*			+				
Northern Wheatear *Oenanthe oenanthe*			+				
Pied Wheatear *Oenanthe pleschanka*			+				
Whinchat *Saxicola rubetra*			+				
African Thrush *Turdus pelios*				+			
Grey-backed Camaroptera *Camaroptera brachyura*	+	+					
Red-faced Cisticola *Cisticola erythrops*			+				
Winding Cisticola *Cisticola galactotes*	+						
Zitting Cisticola *Cisticola juncidis*			+				
Croaking Cisticola *Cisticola natalensis*			+				
Trilling Cisticola *Cisticola woosnami*		+		+			
Grey-capped Warbler *Eminia lepida*		+					
Olivaceous Warbler *Hippolais pallida*		+					
Buff-bellied Warbler *Phyllolais pulchella*		+					
Willow Warbler *Phylloscopus trochilus*		+	+	+			
White-chinned Prinia *Prinia leucopogon*	+						
Tawny-flanked Prinia *Prinia subflava*		+	+				
Green Crombec *Sylvietta virens*	+						
Dusky Blue Flycatcher *Muscicapa comitata*	+						
Black and White Flycatcher *Bias musicus*	+	+					
Wattle-eye *Platysteira cyanea*	+						
Paradise Flycatcher *Terpsiphone viridis*	+						
Red-throated Pipit *Anthus cervinus*			+				
Plain-backed Pipit *Anthus leucophrys*			+				
Richard's Pipit *Anthus novaeseelandiae*			+				
Yellow-throated Longclaw *Macronyx croceus*			+	+			
African Pied Wagtail *Motacilla aguimp*	+						+
Yellow Wagtail *Motacilla flava*	+		+		+		
Black-headed Gonolek *Laniarius barbarus*	+	+		+			
Brown-headed Tchagra *Tchagra australis*		+					
Black-headed Tchagra *Tchagra senegala*				+			
Grey-backed Fiscal *Lanius excubitorius*			+	+			
Violet-backed Starling *Cinnyricinclus leucogaster*	+						
Wattled Starling *Creatophora cinerea*		+		+			
Rüppell's Long-tailed Glossy Starling *Lamprotornis purpuropterus*	+	+		+			
Yellow-billed Oxpecker *Buphagus africanus*			+	+			
Collared Sunbird *Anthreptes collaris*	+	+					
Olive-bellied Sunbird *Nectarinia chloropygia*	+						

	R	B	G	W	S	A	C
Copper Sunbird *Nectarinia cuprea*		+			+		
Red-chested Sunbird *Nectarinia erythroceria*	+						
Green-throated Sunbird *Nectarinia rubescens*	+						
Scarlet-chested Sunbird *Nectarinia senegalensis*		+		+			
Superb Sunbird *Nectarinia superba*	+						
Green-headed Sunbird *Nectarinia verticalis*	+						
Yellow White-eye *Zosterops senegalensis*	+						
White-winged Widowbird *Euplectes albonotatus*		+	+	+			
Fan-tailed Widowbird *Euplectes axillaris*			+				
Black-winged Red Bishop *Euplectes hordeaceus*		+					
Southern Red Bishop *Euplectes orix*		+					
Black-headed Weaver *Ploceus cucullatus*							+
Masked Weaver *Ploceus intermedius*		+					
Viellot's Black Weaver *Ploceus nigerrimus*	+	+					
Black-necked Weaver *Ploceus nigricollis*	+						
Spectacled Weaver *Ploceus ocularis*	+						
Red-headed Quelea *Quelea erythrops*		+					
Red-billed Quelea *Quelea quelea*				+			
Grey-headed Sparrow *Passer griseus*		+					
Pin-tailed Whydah *Vidua macroura*		+					
Fawn-breasted Waxbill *Estrilda paludicola*	+						
African Firefinch *Lagonosticta rubricata*		+					
Red-billed Firefinch *Lagonosticta senegala*		+					+
Red-headed Bluebill *Spermophaga ruficapilla*	+						
Bronze Mannikin *Lonchura cucullata*	+	+					
Golden-breasted Bunting *Emberiza flaviventris*		+					
Cinnamon-breasted Rock Bunting *Emberiza tahapisi*		+					
Yellow-fronted Canary *Serinus mozambicus*		+					
Total number of species per habitat	75	66	78	59	44	32	7

Little Grebe *Tachybaptus ruficollis* and Red-naped Widowbird *Euplectes ardens* were also recorded but only in the adjacent Kigezi Game Reserve.